Algebra 2™

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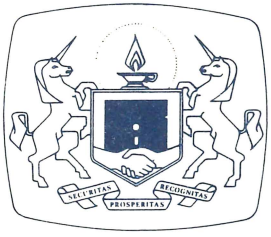

The Software Guild

SYSTEM REQUIREMENTS

Apple® II, II+ or Franklin Ace™ 1000 • 48K RAM
Applesoft • DOS 3.3 • One disk drive

PACKAGE CONTENTS

Algebra 2 Diskette
Instruction Booklet
Warranty Card

OVERVIEW

Algebra 2 is for students interested in developing fundamental algebra concepts beyond those contained in Algebra 1. Powerful computer techniques like colorful graphic displays, evaluation messages and flow charted maps make Algebra 2 the modern and easy way to study. Whether in a home or classroom environment, it's fun and successful because you customize the lessons to best suit your needs and learning pace.

Although this program is a self-contained unit, it represents only one part of a complete algebra learning system of five separate programs. The four units covered in Algebra 2 are: Addition of Real Numbers, Multiplication of Real Numbers, Solving Equations and Problems, and Solving Inequalities.

INPUTS AND OUTPUTS

Inputs are entries which you type into the computer. In this manual inputs are presented in one of two ways:

individual console keys	<RETURN>, <3>, <P>
everything else	*RUN, 09/12/82, Roger*

While running the program, the computer will be presenting a variety of information, prompts and messages to you on the screen. In this manual such outputs will be presented in boldface italics:

(sample output)	***Enter your name***

Note: The <CTRL> key operates like the shift key on a regular typewriter. If you are told to enter <CTRL-P>, just press <P> while holding the <CTRL> key down.

IMPORTANT TIPS

Handle your diskettes carefully and always keep them in their special jackets while not in use.

Do make sure the shift lock light is lit if running this program on the Franklin Ace. This program recognizes only capital letters.

Do not press <CTRL-C> while the program is running. Results are unpredictable and damage to your program may result.

Do not open the disk drive door while the "in-use" light is on. This may damage your diskette and render it unusable.

Do not try to make a copy of this disk. If during normal use something goes wrong with your diskette, please refer to the Troubleshooting section of this manual.

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Table of Contents

Page

System Requirements ..... Front cover
Package ..... Front cover
Overview ..... Front cover
Inputs and Outputs ..... Inside cover
Important Tips ..... Inside cover

I. An Introduction to Algebra 2 1
How to Use This Manual 1
Warranty Card 1
Getting Started 2

II. How To Use Algebra 2 3
The Algebra Menu 3
Post-Tests 6
Getting Around In the Program 6
The Menu Step Illustration 7

III. Planning Your Lesson Sequence 8
The Lessons of Algebra 2 8
Prompt Messages 10

IV. Troubleshooting 11

I. An Introduction to Algebra 2

Congratulations on your Algebra 2 purchase. It shows that you are now on your way to acquiring important skills in an advanced math subject. Although Algebra 2 is a part of a complete Algebra system, your program stands alone as an independent unit which covers four subject units: Addition of Real Numbers, Multiplication of Real Numbers, Solving Equations and Problems, and Solving Inequalities.

Since this program was thoughtfully prepared you will find learning to be enjoyable because only you determine the rate at which you proceed through your lessons. Through easy to follow entry/exit flow charts you see the concepts already learned, those still to learn and those in which you are weak and in need of review — all at a glance!

With Algebra 2 you can:

- Get "positive feedback" throughout each unit in the program by reading computer responses that evaluate your progress.
- Plan the lesson pace around your speed. A customized learning style lets you experiment with your needs.
- Follow a recommended sequence by looking at easy-to-read flow charted "information maps" and other colorful graphic displays.

Once you see how effectively Algebra 2 works, you will be anxious to try other educational programs available from Softsmith.™ Consult your local dealer for a catalog and demonstration.

WARRANTY CARD

Please take a moment to complete and mail the enclosed Warranty Card. By having your name on file we will be able to provide better customer service, including information on program updates and replacement of damaged diskettes.

GETTING STARTED

To get started with Algebra 2 simply follow these steps (this is called "booting"):

1. Make sure the power switch on the rear left of the computer is in the off position.

2. Open the disk drive door by pulling out and up on its bottom edge. Slip the diskette into drive #1 with your right thumb on the diskette's label. (The label will be up and will be the last edge of the diskette to enter the drive.)

3. When the diskette is entirely in the drive, close the drive door.

4. Turn the power switch to the on position. You will hear a "beep" from the computer and the "in-use" light on the disk drive will come on. This means that the program is loading.

You will now see the Softsmith logo page and Algebra 2 title page appear on the screen. If you don't, please try turning your computer off briefly, and then on again.

HOW TO USE THIS MANUAL

This manual explains how to use Algebra 2. It is written so that after reading the first chapter you are ready to learn how to use Algebra 2. We suggest, however, that you read this manual in its entirety before operating your program.

Chapter II introduces you to Algebra 2's concept organization (the Algebra Menu). There are also examples of what you will see on the screen once your Algebra 2 program is running. Chapter III includes the complete listing of concepts in each unit and points out what you can utilize in planning your lesson sequence.

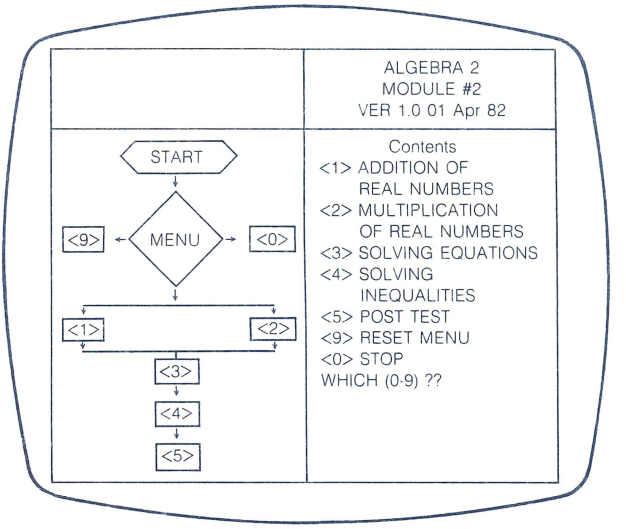
The last chapter of the manual is devoted to the handling of errors. If problems arise with your Algebra 2 program, refer to this section. Good luck and get ready to build important skills which will prepare you for advanced mathematical studies.

II. How To Use Algebra 2

By reading this chapter you will familiarize yourself with all the important structural information which makes Algebra 2 the successful program it is. For your learning convenience, an illustration of an actual menu sequence is provided at the chapter's end to avoid any confusion.

THE ALGEBRA MENU

Begin by following the "Getting Started" instructions above. After your disk has been "booted", the first screen shown is the Algebra Menu, which looks like this:

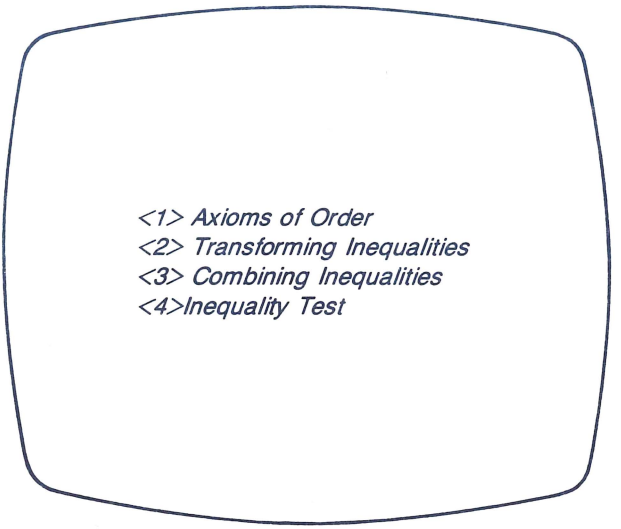


Select any desired program from the menu and press the number key for that program. The highlighted box on the left confirms your selection. If you have a color TV or monitor on your Apple II or Apple II+, you will notice that Algebra 2 uses color coordinated outlines around boxes on the Menu. These provide lesson sequence information to help remind you where you are in the course.

- A white outline means that the unit post test has not been attempted.
- A green outline tells you that you passed a post test.
- A red outline warns you of areas in your program that you unsuccessfully attempted and need to review.
- A blue outline indicates a recommended unit.

Note: To Franklin Ace Users: Although the color coding enhances your Algebra 2 program it is not a necessary feature.

After you have entered your selection, a list of concepts associated with that lesson will appear. This is the first of two sub-menus. To get a better idea of these concepts look at "The Lessons of Algebra 2" section and notice the contents after each unit title. Here is a list of concepts the screen would display if you pressed <4> on the Algebra Menu.



Select the concept you wish to work with, and the second sub-menu (the mode selection screen) will appear. Mode selection gives you a choice about how you study concepts. Here are your choices and a brief description.

- Discussion: an explanation of concept terms.
- Rules: all rules associated with a concept are presented.
- Examples: for each concept there are many examples demonstrating how to apply that idea and how to solve related problems.
- Sample Problems: in each mode I6 test problems are presented. After each response a ***RIGHT*** is provided if the answer is correct, a ***WRONG***, or a ***NO***, with the correct answer given, if the response was incorrect.

In most cases you will want to examine all four to fully grasp the concept. Sometimes, however, you may just want to see an example or sample problem. The choice is always yours. After you have chosen the mode, the first page of the information contained in that mode will appear on the screen. When you have completed the unit, a post test is given to evaluate your knowledge of each concept.

NOTE: On the top of the screen display for each page you will notice in the upper left hand corner three letter/number groups. The letters are C, M, and P. The C refers to the concepts which are available on the menu. The M refers to the mode: One = Definitions; two = Rules; three = Examples; and four = Sample Problems. The P refers to the page number within that concept and mode. Sometimes there might be one page for a particular mode and in other cases there are multiple pages.

POST-TESTS

Post tests are optionally taken when you feel you have mastered a certain unit. In each concept area sixteen to twenty questions are offered. Your responses are evaluated and the total number of right and wrong answers are presented on the screen. The computer will also indicate any area of weakness at this point.

GETTING AROUND IN THE PROGRAM

These instructions allow you to move about within Algebra 2 more easily.

To change modes: Press the <ESC>, <M> and <n> keys. (n is the mode number you want to change.)

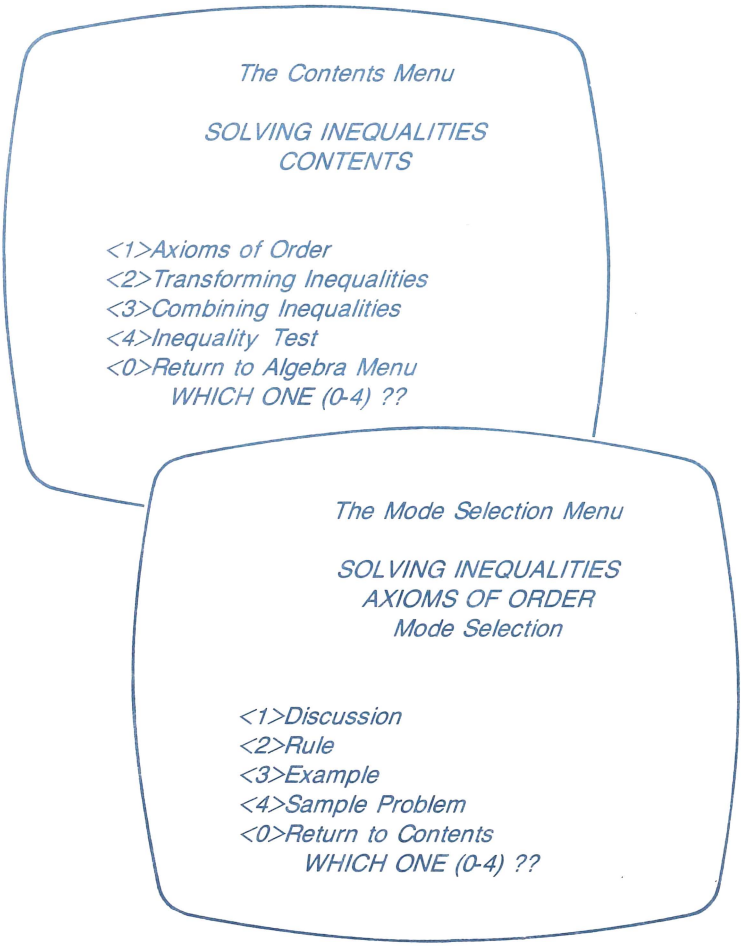
To Return to the concept Menu: Press <ESC>, <M> and <0> This will allow you to continue and repeat your current mode or select a new mode or concept.

To repeat or return to a page in the mode: Press <ESC>,<M> and <n> (n is the mode number you are in.)

To leave the program: Press <ESC>. Wait for a beep and press <ESC> again. You will return to the main Menu. Press <0> and the program will end.

MENU STEP ILLUSTRATION

Below is an example of how you can progress through the Algebra 2 menus. The contents menu shown lists the selections available after you press <4> on the Algebra menu pictured earlier. You may select any number on the contents menu but generally you will want to select all the concepts in turn. For each, the Mode Selection menu will appear. To learn most effectively, use all four teaching modes for each concept.



III. Planning Your Lesson Sequence

Now that you have learned how to use Algebra 2 this chapter will guide you more carefully through a recommended sequence to learn the algebra concepts. This is easy because the computer does all the hard work. All you have to do is follow along!

THE LESSONS OF ALGEBRA 2

Here is a complete listing of lesson units and concepts available in Algebra 2. After you have completed these units you should be accomplished in basic algebra.

Unit One: Addition of Real Numbers

- Axioms of Closure and Equality
  - Reflexive Property of Equality
  - Symmetric Property of Equality
  - Transitive Property of Equality
  - Axiom of Closure for Addition
  - Substitution Principle
- Commutative and Associative Axioms
  - Commutative Axiom of Addition
  - Associative Axiom of Addition
- The Identity Element and Displacement
  - Displacement
  - Identity Element for Addition
  - Additive Axiom of Zero
- The Opposite of a Real Number
  - Additive Inverse
  - Axiom of Opposites
  - Property of the Opposite of a Sum

Unit Two: Multiplication of Real Numbers

- Axioms of Closure and Equality
  - Reflexive Property of Equality
  - Symmetric Property of Equality
  - Transitive Property of Equality
  - Axiom of Closure for Multiplication
  - Substitution Principle
- Commutative and Associative Axioms
  - Commutative Axiom of Multiplication
  - Associative Axiom of Multiplication
- The Distributive Property of Multiplication
  - Equivalent Expressions
- Rules for Multiplication
  - Identity Element of Multiplication
  - Multiplicative Axiom of One
  - Multiplicative Property of Zero
  - Multiplicative Property of -1
  - Property of Opposites in Products
- The Reciprocal of a Real Number
  - Multiplicative Inverse
  - Axiom of Reciprocals
  - Property of the Reciprocal of a Product

Unit Three: Solving Equations and Problems

- Equations
  - Root of an Equation
  - Solution Set
  - Solve an Equation
  - Domain
  - Conditional Equation
  - Identity
- Transformation by Addition and Subtraction
  - Addition of Properties by Equality
  - Subtraction of Properties by Equality
  - Transformation by Substitution
  - Transformation by Addition
  - Transformation by Subtraction
- Transformation by Multiplication and Division
  - Multiplication Property of Equality
  - Division Property of Equality
  - Transformation by Multiplication
  - Transformation by Division
- Using Several Transformations
  - Inverse Operations
  - Like Terms
- Functions
  - Domain and Range

Unit Four: Solving Inequalities

- Axioms of Order
  - Transitive Axiom of Order
  - Additive Property of Order
  - Multiplicative Property of Order
  - Axiom of Comparison
- Transforming Inequalities
  - Equivalent Inequalities
  - Conditional Inequalities
- Combining Inequalities
  - Conjunction
  - Disjunction

PROMPT MESSAGES

The Algebra 2 program will ask, instruct, or offer information numerous times while using your system. By paying close attention to the messages, you can save time worrying about your progress because the computer will oversee your work and suggest the next step to you. Use the color codes explained in Chapter II which outline each rectangular figure in the flow charts. Also pay attention to the Post-test messages which appear at the end of each test. Your skills are evaluated at this point in the program, so you may use these scores as reference. Finally, the flow charts presented throughout the program take the frustration out of deciphering what information you do and do not know. Use the recommended sequence displays to locate concepts you have covered or have yet to tackle.

III. Troubleshooting

Refer to this section if your new Algebra 2 program does not work properly.

The program never starts, or dies soon after starting.

- Check the instructions for getting started. Try them again, following all the steps exactly.
- Check to see that you have the diskette in disk drive #1, and that this drive is in slot #6.
- Make sure you have all the equipment necessary to run this program, and that it is properly connected. See the front page of this booklet for a list of necessary equipment.
- Make sure your disk drive is working properly. Try another diskette which you know to be good. If it also does not start properly, stop the computer immediately, and disconnect the drive. Do not use the drive again until it is checked, or it may damage other diskettes.

Your disk becomes damaged.

Given normal use, it should not be possible to damage your diskette. Should your diskette become damaged, please send it to us at the address below, together with a short description of the problem. The Software Guild will replace your disk promptly, per provisions in the warranty.

Other problems.

If you have problems with your program, please contact the dealer where you purchased the software. They have the experience and service network to assist you.

The objective of The Software Guild is to provide the highest quality software products available. In order to improve our products wherever possible, we are happy to receive comments, criticism or praise. Write to us at:

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